From: Dan Berlin <dberlin@anchorqea.com>
Sent: Thursday, January 14, 2016 10:21 AM
To: Sanga, Ravi <Sanga.Ravi@epa.gov>
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Subject: RE: EPA Remaining Questions on EW RALs an and Alternatives

Ravi,
Please see responses to EPA comments/questions in *red* below. We have also attached a new table (Table 8) that describes the thicknesses and concentrations used as model inputs for the base case to assist in your understanding of dredging and ENR-nav performance.

Please also note that we identified a QC issue with the previous box model runs, and are attaching a slightly revised Table 4. Cells highlighted in yellow changed by less than 1 ppb but round to a different number than previously reported in earlier drafts of Table 4.

We hope this information supports your understanding so we can reach agreement very soon on the suite of alternatives to be evaluated in the draft final FS.

Thanks
Dan

Dan Berlin
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From: Sanga, Ravi [mailto:Sanga.Ravi@epa.gov]
Sent: Tuesday, January 05, 2016 2:55 PM
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Subject: EPA Remaining Questions on EW RALs an and Alternatives

Dan EPA has reviewed EWGs responses to EPAs questions on the EW RALs and Alternatives and concurs on most of the responses.

However, EPA still has a question (on the response for Question 6) that requires additional information. Why does ENR-Nav perform better than dredging both in Year 0 and Year 5 ? The EWG stated that differences were small and within the uncertainty of such analyses. This response unfortunately does not conceptually answer the question as to how the EWG achieved the result that was achieved. At Year 5, with 2 to 3 ft of mixing, ENR-Nav would perform much worse than dredging, especially if a lower RAL were used.

The previous EWG response explains why the year 0 post-construction SWAC is higher for removal compared to ENR-nav; this response is expanded to explain why SWACs are similar for these areas in year 5 (i.e., following mixing). In summary, the SWACs in removal and ENR-nav areas are similar due to the roughly equivalent countervailing influences of dredging residuals (which are thicker in removal areas than ENR-nav areas) and underlying sediment (which have lower concentrations in removal areas than ENR-nav areas). This result is reasonable considering that ENR-nav is assigned in areas with lower initial concentrations and includes less dredging.

Attached Table 4 presents the most recent SWACs for the alternatives; both Alternatives 1B and 2B have year 5 SWACs of 75 ug/kg. (Note that, as part of additional QC work, we found an error that increases the Alternative 1 Year 5 SWAC by 0.5 ppb for PCBs). The responses below step through additional details on the thickness and concentration assumptions in the box model.

EPA believes that for ENR-Nav, 1.5 ft of sediment with a concentration of at least 200 ppb PCBs (or the average concentration of 760 ppb) would be mixed with 0.5 ft of cover having 10 ppb PCBs over 50% of the ENR area to yield an average PCB concentration of 81 to 291 ppb (depending on the sediment PCB concentration).

The attached Table 8 presents the thicknesses and concentrations used as model inputs for the base case. As shown in the table, the ENR-nav placement layer averages 18 in. Cover concentration is assumed to be 2 ug/kg. With 2 ft of mixing (and considering dredge residuals thickness), the underlying sediment is mixed to a depth of 5.6 in and 4.2 in in ENR-nav and partial removal and ENR-nav areas, respectively. Underlying sediment concentrations are 303 ug/kg and 129 ug/kg, respectively. With base-case assumptions and incorporating mixing, sedimentation, and underpier exchange, the resulting Year 5 SWAC is 63 ug/kg for ENR-nav areas, 82 ug/kg in partial removal and ENR-nav areas, and 71 ug/kg for the two areas combined.

The same area, if dredged, would have 0.5 ft of cover having 41 ppb PCBs, 0.15 ft of residuals at 200 to 760 ppb PCBs and 1.35 ft of sediment at perhaps 40 ppb PCBs mixed together over 50% of the area to yield an average PCB concentration of 47 to 68 ppb (depending on the sediment PCB concentration).

As shown in Table 8, the cover layer averages 9 in in thickness, residuals are estimated to be 760 ug/kg, and underlying sediment is estimated to be 15 ug/kg. The resulting Year 5 SWAC is 73 ug/kg, approximately 2 ug/kg higher than combined ENR-nav areas.

Consequently, ENR-Nav should not be more effective than dredging as given in the revised Table 4.

Prior to moving forward with the alternatives, EPA is requiring further explanation and perhaps an example of the calculations of Option 1 in regards to calculation of Year 5 results for just the 9 acres of ENR-nav and the 7 acres of partial removal and ENR-Nav.

Let me know if you have any questions,

Thanks

Ravi
From: Dan Berlin [mailto:dberlin@anchorqea.com]
Sent: Tuesday, December 22, 2015 9:24 AM
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Subject: RE: EPA Questions on EW RALs an and Alternatives

Ravi,
Attached are the responses to EPA's questions on the RALs and alternatives. Also attached are supporting attachments that are referenced in the responses, to expedite your review. We made a few minor updates to Table 4 since the last version. Please also note that EWG is proposing 25% for underpier exchange (as an update to parameter 6 on Table 1), which we plan to discuss during our next WPAM.
I'll give you a call to follow up on these responses to see if you have any more questions, as the responses are quite detailed.
Thanks
Dan

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Subject: EPA Questions on EW RALs an and Alternatives

Dan -- Attached are questions from EPA on EWs RALs and Alternatives. Before any further meetings are scheduled with EPA and the EWG, I'd like a response to these questions from the EWG sent to EPA. Answers to these questions and will further assist EPA on making a final decision on RALs and the scope of the Remedial Alternatives.

Let me know if you have any questions or concerns or require clarifications on the questions. I can set up a call for the latter.

Ravi